



FINAL OFFICE ACTION RESPONSE

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicants: David A. Schwartz  
Serial No.: 09/815,978  
Filed: 22 March 2001  
Group Art Unit: 1654  
Examiner: J. E. Russel

For: "HYDRAZINE-BASED AND CARBONYL-BASED  
BIFUNCTIONAL CROSSLINKING REAGENTS"

**APPLICANT'S RESPONSE TO FINAL OFFICE ACTION**  
**PURSUANT TO 37 C.F.R. § 1.113(c)**

Honorable Commissioner of Patents and Trademarks  
Washington, D.C. 20231

Dear Sir:

The following is Applicant's response to the third (final) Office Action mailed 12 June 2003.

**INTRODUCTORY COMMENTS**

Claims 54-70 are currently under consideration.

RECEIVED  
SEP 14 2003  
TECHNICAL

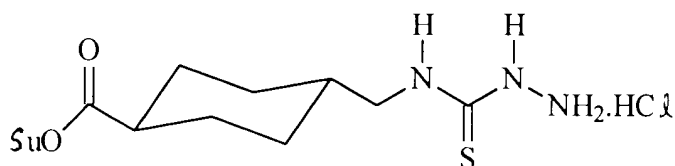
## AMENDMENTS TO THE CLAIMS

Please add the following new claims:

54. (cancelled)

55. (cancelled)

56. (original) The compound according to claim 71 of the formula:



57.-70. (cancelled)

71. (new) A compound of formula I



I

wherein;

A is  $-\text{NH}(\text{C}=\text{S})-$ ;

B is an amino reactive moiety;

R is  $-\text{OOC}-(\text{C}_6\text{H}_{10})-\text{CH}_2-$ ; and

X is a negative counterion.

72. (new) The compound according to claim 71, wherein X is a halide or trifluoroacetate.

73. (new) The compound according to claim 71, wherein B is an amino reactive moiety which is a succinimidyl ester, a hydroxybenzotriazolyl ester or a pentafluorophenol ester.

74. (new) A conjugate comprising the compound according to claim 71 bound to a biological molecule.

75. (new) The conjugate according to claim 74, wherein the biological molecule is a protein, a glycoprotein, or a peptide.

76. (new) The conjugate according to claim 74, wherein the biological molecule is a polynucleotide, an oligonucleotide, an RNA or a DNA.

77. (new) The conjugate according to claim 75, wherein the protein is an antibody.

78. (new) A method of immobilizing a biological molecule, comprising:

- (a) preparing the conjugate according to claim 74; and
- (b) applying the conjugate to a surface wherein the surface has at least one carbonyl moiety for a time and under conditions such that the hydrazine moiety of the conjugate reacts with the at least one carbonyl moiety of the surface forming a hydrazone bond to the surface.

79. (new) A method of immobilizing a biological molecule, comprising:

- (a) applying the compound according to claim 71 to a surface comprising at least one amine moiety; and
- (b) applying a biological molecule having at least one carbonyl moiety for a time and under conditions such that the hydrazine moiety of the surface reacts with the at least one carbonyl moiety of the biological molecule forming a hydrazone bond to the surface.

80. (new) A method of crosslinking a first biological molecule to a second biological molecule, comprising:

- (a) preparing the conjugate of the first biological molecule according to claim 74; and
- (b) mixing the conjugate with the second biological molecule wherein the second biological molecule has at least one carbonyl moiety for a time and

under conditions such that the hydrazine moiety of the conjugate reacts with the at least one carbonyl moiety of the second biological molecule forming a hydrazone bond crosslinking the first biological molecule to the second biological molecule.

81. (new) The method according to claim 80, wherein the first biological molecule is a protein, a glycoprotein, or a peptide.

82. (new) The method according to claim 80, wherein the first biological molecule is a polynucleotide, an oligonucleotide, an RNA or a DNA.

82. (new) The method according to claim 81, wherein the protein is an antibody.